1. A packet communication method using a
plurality of packet transfer apparatuses which are
connected to a network and transfer a lower layer frame
containing an encapsulated upper layer packet, at least
one frame transfer apparatus which mediates transfer of
the lower layer frame between the packet transfer
apparatuses through the network, and a network control
server which is connected to the packet transfer
apparatuses and the frame transfer apparatus and
controls a communication route of the lower layer frame
in the network by giving an instruction to the packet
transfer apparatuses and the frame transfer apparatus,
characterized in that

the packet transfer apparatus comprises

an extraction procedure which extracts, from
the received lower layer frame, a lower layer address
pair including a transmission source address and
destination address of a lower layer,

a first registration procedure which registers
a sending destination of the received lower layer frame
in a first table for each corresponding destination
address,

a first counter procedure which counts, for
each type of lower layer address pair, a quantity of the
lower layer address pair extracted by the extraction
procedure, and

27　　　　　　a first transmission procedure which

28　transmits, to the frame transfer apparatus, first

29　information representing the lower layer address pair

30　counted by the first counter procedure beyond a

31　predetermined threshold value within a predetermined

32　time,

33　　　　　　the frame transfer apparatus comprises

34　　　　　　a second registration procedure which

35　registers a transfer destination of the received lower

36　layer frame in a second table for each destination

37　address contained in the lower layer frame,

38　　　　　　a second counter procedure which counts a

39　quantity of the transferred lower layer frame for each

40　type of lower layer address pair contained in the first

41　information received from the packet transfer apparatus,

42　and

43　　　　　　a second transmission procedure which

44　transmits, to the network control server, second

45　information about the lower layer address pair counted

46　by the second counter procedure beyond a predetermined

47　threshold value within a predetermined time, and

48　　　　　　the network control server comprises

49　　　　　　a calculation procedure which, upon receiving

50　the second information, extracts the transmission source

51　address and destination address from the second

52　information and executes calculation to optimize the

53　communication route in the network between the

54 transmission source address and the destination address,

55 and

56   a change procedure which changes registration

57 of the sending destination of the lower layer frame

58 registered in the first table and second table on the

59 basis of the calculation result.

        2. A packet communication method using a

2 plurality of packet transfer apparatuses which are

3 connected to a network and transfer a lower layer frame

4 containing an encapsulated upper layer packet, at least

5 one frame transfer apparatus which mediates transfer of

6 the lower layer frame between the packet transfer

7 apparatuses through the network, and a network control

8 server which is connected to the packet transfer

9 apparatuses and the frame transfer apparatus and

10 controls a communication route of the lower layer frame

11 in the network by giving an instruction to the packet

12 transfer apparatuses and the frame transfer apparatus,

13 characterized in that

14   the packet transfer apparatus comprises

15   an extraction procedure which extracts, from

16 the received lower layer frame, a lower layer address

17 pair including a transmission source address and

18 destination address of a lower layer,

19   a counter procedure which counts, for each

20 type of lower layer address pair, a quantity of the

21 lower layer address pair extracted by the extraction

22 procedure, and

23   a transmission procedure which transmits, to

24 the frame transfer apparatus, first information

25 representing the lower layer address pair counted by the

26 counter procedure beyond a predetermined threshold value

27 within a predetermined time.

          3.   A packet communication method according to

2   claim 2, characterized in that in transmitting the first

3   information to the frame transfer apparatus, the

4   transmission procedure transmits information about the

5   destination address contained in the frame information

6   and a destination address of an upper layer

7   corresponding to the destination address to the

8   transmission source address of the lower layer address

9   pair contained in the first information.

          4.   A packet communication method using a

2   plurality of packet transfer apparatuses which are

3   connected to a network and transfer a lower layer frame

4   containing an encapsulated upper layer packet, at least

5   one frame transfer apparatus which mediates transfer of

6   the lower layer frame between the packet transfer

7   apparatuses through the network, and a network control

8   server which is connected to the packet transfer

9   apparatuses and the frame transfer apparatus and

10 controls a communication route of the lower layer frame

11 in the network by giving an instruction to the packet

12 transfer apparatuses and the frame transfer apparatus,

13   characterized in that

14   the frame transfer apparatus comprises

15   a counter procedure which counts a quantity of

16   the transferred lower layer frame for each type of lower

17   layer address pair which is instructed by the packet

18   transfer apparatus to count, and

19   a transmission procedure which transmits, to

20   the network control server, second information

21   representing the lower layer address pair counted by the

22   counter procedure beyond a predetermined threshold value

23   within a predetermined time.

          5.   A packet communication method according to

2   claim 4, characterized by further comprising a count

3   processing procedure which deletes, from the count, an

4   entry of an arbitrary lower layer address pair whose

5   count value does not increase in a predetermined time.

          6.   A packet communication method using a

2   plurality of packet transfer apparatuses which are

3   connected to a network and transfer a lower layer frame

4   containing an encapsulated upper layer packet, at least

5   one frame transfer apparatus which mediates transfer of

6   the lower layer frame between the packet transfer

7   apparatuses through the network, and a network control

8   server which is connected to the packet transfer

9   apparatuses and the frame transfer apparatus and

10   controls a communication route of the lower layer frame

11   in the network by giving an instruction to the packet

12   transfer apparatuses and the frame transfer apparatus,

13   characterized in that

14   the network control server comprises

15   a calculation procedure which, upon receiving

16   second information representing an arbitrary

17   transmission source address and destination address from

18   the frame transfer apparatus, executes calculation to

19   optimize the communication route in the network between

20   the transmission source address and the destination

21   address, and

22   a change procedure which issues an instruction

23   to change a sending destination of the lower layer frame

24   to the packet transfer apparatus and frame transfer

25   apparatus included between the transmission source

26   address and the destination address on the basis of the

27   calculation result.

            7.   A packet communication method according to

 2   claim 1, characterized by further comprising

 3   in a connectionless packet transfer network

 4   which is logically build on a connection network

 5   comprising a transmission link having a connection

 6   multiplex transmission function and a connection switch

 7   node having a connection switching function by adding,

 8   as a terminal function unit, a connectionless packet

 9   transfer node serving as the frame transfer apparatus

10   and a connectionless packet communication terminal

11   serving as the packet transfer apparatus to the

12   connection network, when connection arrangement is to be

13   executed in accordance with a traffic band and traffic

14   priority of the connectionless packet transfer network,

15   a notification procedure which records

16   statistical information containing a band and priority

17   for each flow defined by a pair of the transmission

18   source address and destination address for the packet

19   transmitted/received in the connectionless packet

20   communication terminal and notifies a traffic control

21   apparatus serving as the network control server of the

22   recorded statistical information, and

23   a flow list creation procedure which causes

24   the traffic control apparatus to create a flow list in

25   which information containing the transmission source

26   address, destination address, priority, and band is

27   registered for each flow, on the basis of the

28   statistical information sent from the connectionless

29   packet communication terminal.

            8.   A packet communication method according to

2   claim 7, characterized by further comprising

3   a flow list sorting procedure which sorts the

4   flow list in descending order of priority and sorts

5   flows with the same priority in descending order of

6   band, and

7   a connection candidate list creation procedure

8   which, assuming that a connection is set between a

9   transmission source connectionless packet communication

10 terminal and a destination connectionless packet

11 communication terminal of each flow registered in the

12 sorted flow list, creates a connection candidate list by

13 assigning a connection candidate for all flows

14 sequentially from an uppermost flow in the flow list.

9. A packet communication method according to

2 claim 7, characterized in that the connection candidate

3 list creation procedure creates the connection candidate

4 list by assigning not less than one flow having the same

5 transmission source connectionless packet communication

6 terminal, the same destination connectionless packet

7 communication terminal, and the same priority to the

8 same connection candidate without making a sum of bands

9 exceed a capacity of the connection candidate and

10 determining the priority and band of the connection

11 candidate on the basis of the priority and the sum of

12 the bands of the assigned flows.

10. A packet communication method according to

2 claim 8, characterized by further comprising

3 a connection candidate list sorting procedure

4 which sorts the connection candidate list in descending

5 order of priority and sorts connection candidates with

6 the same priority in descending order of band, and

7 a reservation procedure which reserves a

8 connection interface of the connectionless packet

9 communication terminal for all connection candidates

10 contained in the sorted connection candidate list

11 sequentially from an uppermost connection candidate in

12 the sorted connection candidate list.

11. A packet communication method according

2 to claim 10, characterized by further comprising

3 a selection procedure which selects, on the

4 basis of the connection candidate list sorted by the

5 connection candidate list sorting procedure, a

6 connection requiring no setting from a connection

7 solution list in which connections to be set are

8 registered,

9 a comparison procedure which sets, as a

10 connection candidate as a processing target, a

11 connection candidate for which reservation is possible

12 in the sorted connection candidate list and compares the

13 priority and band of the connection candidate as the

14 processing target with those of the selected connection,

15 a connection solution list creation/update

16 procedure which, when the priority and band of the

17 connection candidate as the processing target are more

18 than those of the selected connection, excludes the

19 connection candidate as the processing target from the

20 connection candidate list and adds the connection

21 candidate as the processing target to the connection

22 solution list, and excludes the selected connection from

23 the connection solution list and adds the selected

24 connection to the connection candidate list, and

25 a taboo connection list registration procedure

26 which, when the priority and band of the connection

27 candidate as the processing target are not more than

28 those of the selected connection, registers the

29 connection candidate as the processing target in a taboo

30 connection list,

31   wherein the comparison procedure sets, of the

32 connection candidates for which reservation is possible,

33 an uppermost connection candidate which is not

34 registered in the taboo connection list as the

35 connection candidate as the processing target.

        12. A packet communication method according

 2 to claim 10, characterized by further comprising

 3   a selection procedure which selects, on the

 4 basis of the connection candidate list sorted by the

 5 connection candidate list sorting procedure, a

 6 connection requiring no setting from a connection

 7 solution list in which connections to be set are

 8 registered,

 9   a comparison procedure which sets, as a

10 connection candidate as a processing target, a

11 connection candidate for which reservation is possible

12 in the sorted connection candidate list and compares the

13 priority and band of the connection candidate as the

14 processing target with those of the selected connection,

15   a connection solution list creation/update

16 procedure which, when the priority and band of the

17 connection candidate as the processing target are more

18 than those of the selected connection, excludes the

19 connection candidate as the processing target from the

20 connection candidate list and adds the connection

21 candidate as the processing target to the connection

22 solution list, and excludes the selected connection from

23 the connection solution list and adds the selected

24 connection to the connection candidate list,

25   a taboo connection list registration procedure

26 which records the connection candidate as the processing

27 target in a taboo connection list together with the

28 current number of times of execution of the comparison

29 procedure, and

30   a taboo connection list delete procedure which

31 deletes, from the taboo connection list, a connection

32 candidate recorded together with the number of times of

33 execution which is smaller than the current number of

34 times of execution of the comparison procedure by not

35 less than a predetermined number,

36   wherein the comparison procedure sets, of the

37 connection candidates for which reservation is possible,

38 an uppermost connection candidate which is not

39 registered in the taboo connection list as the

40 connection candidate as the processing target.

        13. A packet communication method according

2 to claim 11, characterized by further comprising

3   a route calculation procedure which calculates

4 a route when the uppermost connection in the connection

5   solution list between the transmission source

6   connectionless packet communication terminal and the

7   destination connectionless packet communication

8   terminal,

9   a connection setting procedure which, when a

10   transmission resource necessary for transmitting the

11   uppermost connection can be ensured in a transmission

12   link on the calculated route, controls the switching

13   function of the connection switch node to set the

14   uppermost connection, controls the transmission function

15   of the transmission source connectionless packet

16   communication terminal of the flow to transmit the flow

17   assigned to the uppermost connection by using the

18   connection, and excludes the uppermost connection from

19   the connection solution list, and

20   a connection solution list delete procedure

21   which, when the transmission resource cannot be ensured,

22   excludes the uppermost connection from the connection

23   solution list and adds the uppermost connection to the

24   connection candidate list.

         14.   A packet communication method according

2   to claim 12, characterized by further comprising

3   a route calculation procedure which calculates

4   a route when the uppermost connection in the connection

5   solution list between the transmission source

6   connectionless packet communication terminal and the

7   destination connectionless packet communication

8   terminal,

9   a connection setting procedure which, when a

10 transmission resource necessary for transmitting the

11 uppermost connection can be ensured in a transmission

12 link on the calculated route, controls the switching

13 function of the connection switch node to set the

14 uppermost connection, controls the transmission function

15 of the transmission source connectionless packet

16 communication terminal of the flow to transmit the flow

17 assigned to the uppermost connection by using the

18 connection, and excludes the uppermost connection from

19 the connection solution list, and

20   a connection solution list delete procedure

21 which, when the transmission resource cannot be ensured,

22 excludes the uppermost connection from the connection

23 solution list and adds the uppermost connection to the

24 connection candidate list.

            15. A packet communication method according

2   to claim 13, characterized in that when the connection

3   solution list is empty, when the connection interface

4   cannot be reserved for any of the connection candidates

5   registered in the connection candidate list, or when the

6   transmission resource cannot be ensured for any of the

7   connections registered in the connection solution list,

8   one of a series of procedures including the flow list

9   sorting procedure, the connection candidate list

10 creation procedure, the connection candidate list

11 sorting procedure, the reservation procedure, the

12 selection procedure, the comparison procedure, the

13 connection solution list creation/update procedure, the

14 taboo connection list registration procedure, the route

15 calculation procedure, the connection setting procedure,

16 and the connection solution list delete procedure and a

17 series of procedures including the flow list sorting

18 procedure, the connection candidate list creation

19 procedure, the connection candidate list sorting

20 procedure, the reservation procedure, the selection

21 procedure, the comparison procedure, the connection

22 solution list creation/update procedure, the taboo

23 connection list registration procedure, the taboo

24 connection list delete procedure, the route calculation

25 procedure, the connection setting procedure, and the

26 connection solution list delete procedure is ended.

16.   A packet communication method according

2 to claim 14, characterized in that when the connection

3 solution list is empty, when the connection interface

4 cannot be reserved for any of the connection candidates

5 registered in the connection candidate list, or when the

6 transmission resource cannot be ensured for any of the

7 connections registered in the connection solution list,

8 one of a series of procedures including the flow list

9 sorting procedure, the connection candidate list

10 creation procedure, the connection candidate list

11 sorting procedure, the reservation procedure, the

12   selection procedure, the comparison procedure, the

13   connection solution list creation/update procedure, the

14   taboo connection list registration procedure, the route

15   calculation procedure, the connection setting procedure,

16   and the connection solution list delete procedure and a

17   series of procedures including the flow list sorting

18   procedure, the connection candidate list creation

19   procedure, the connection candidate list sorting

20   procedure, the reservation procedure, the selection

21   procedure, the comparison procedure, the connection

22   solution list creation/update procedure, the taboo

23   connection list registration procedure, the taboo

24   connection list delete procedure, the route calculation

25   procedure, the connection setting procedure, and the

26   connection solution list delete procedure is ended.

17.   A packet communication method according

2   to claim 7, characterized by further comprising a

3   notification interval setting procedure which causes the

4   traffic control apparatus to set a notification interval

5   of the statistical information for the connectionless

6   packet communication terminal,

7   wherein the notification procedure records the

8   statistical information for each flow for the received

9   packet at the set notification interval and notifies the

10   traffic control apparatus of the statistical

11   information, and

12   the flow list creation procedure updates the

13 flow list on the basis of the statistical information

14 sent from the connectionless packet communication

15 terminal.

18. A packet communication method according

2 to claim 7, characterized by further comprising a

3 threshold value setting procedure which causes the

4 traffic control apparatus to set a threshold value of

5 the band for each flow for the connectionless packet

6 communication terminal,

7 wherein the notification procedure records the

8 statistical information for each flow for the received

9 packet, and when the band of the recorded flow exceeds

10 the set threshold value, notifies the traffic control

11 apparatus of the statistical information of the flow

12 whose band exceeds the threshold value, and

13 the flow list creation procedure updates the

14 flow list on the basis of the statistical information

15 sent from the connectionless packet communication

16 terminal.

19. A packet communication method according

2 to claim 1, characterized by further comprising

3 in a connectionless packet transfer network

4 which is logically build on a connection network

5 comprising a transmission link having a connection

6 multiplex transmission function and a connection switch

7 node having a connection switching function by adding,

8 as a terminal function unit, a connectionless packet

9   transfer node serving as the frame transfer apparatus

10   and a connectionless packet communication terminal

11   serving as the packet transfer apparatus to the

12   connection network, when communication is to be executed

13   between the connectionless packet communication

14   terminals,

15   a transfer node selection procedure which

16   selects, as a connection setting target, a

17   connectionless packet transfer node for which the number

18   of connection switch nodes arranged between the

19   connectionless packet transfer node and a destination

20   connectionless packet communication terminal to receive

21   a packet is minimum,

22   a first connection setting procedure which

23   causes a control apparatus serving as the network

24   control server to control the connection switch node to

25   set a first connection between a transmission source

26   connectionless packet communication terminal to transmit

27   the packet and the connectionless packet transfer node

28   as the setting target, and

29   a second connection setting procedure which

30   causes the control apparatus to control the connection

31   switch node to set a second connection between the

32   connectionless packet transfer node as the setting

33   target and the destination connectionless packet

34   communication terminal.

         20. A packet communication method according

2   to claim 19, characterized by further comprising

3   a transmission setting procedure which causes

4   the control apparatus to control the transmission source

5   connectionless packet communication terminal to transmit

6   the packet from the transmission source connectionless

7   packet communication terminal to the destination

8   connectionless packet communication terminal by using

9   the first connection, and

10   a transfer setting procedure which causes the

11   control apparatus to control the connectionless packet

12   transfer node as the setting target to transfer, to the

13   second connection, the packet from the transmission

14   source connectionless packet communication terminal to

15   the destination connectionless packet communication

16   terminal.

             21. A packet communication method according

2   to claim 1, characterized by further comprising

3   in a connectionless packet transfer network

4   which is logically build on a connection network

5   comprising a transmission link having a connection

6   multiplex transmission function and a connection switch

7   node having a connection switching function by adding,

8   as a terminal function unit, a connectionless packet

9   transfer node serving as the frame transfer apparatus

10   and a connectionless packet communication terminal

11   serving as the packet transfer apparatus to the

12   connection network, when communication is to be executed

13 between the connectionless packet communication

14 terminals,

15   a first transfer node selection procedure

16 which selects, as a first connection setting target, a

17 connectionless packet transfer node for which the number

18 of connection switch nodes arranged between the

19 connectionless packet transfer node and a transmission

20 source connectionless packet communication terminal to

21 transmit a packet is minimum,

22   a second transfer node selection procedure

23 which selects, as a second connection setting target, a

24 connectionless packet transfer node for which the number

25 of connection switch nodes arranged between the

26 connectionless packet transfer node and a destination

27 connectionless packet communication terminal to receive

28 the packet is minimum,

29   a first connection setting procedure which

30 causes a control apparatus serving as the network

31 control server to control the connection switch node to

32 set a first connection between the connectionless packet

33 transfer node as the first setting target and the

34 connectionless packet transfer node as the second

35 setting target,

36   a second connection setting procedure which

37 causes the control apparatus to control the connection

38 switch node to set a second connection between the

39 transmission source connectionless packet communication

40   terminal and the connectionless packet transfer node as

41   the first setting target, and

42   a third connection setting procedure which

43   causes the control apparatus to control the connection

44   switch node to set a third connection between the

45   connectionless packet transfer node as the second

46   setting target and the destination connectionless packet

47   communication terminal.

      22.   A packet communication method according

2   to claim 21, characterized by further comprising

3   a transmission setting procedure which causes

4   the control apparatus to control the transmission source

5   connectionless packet communication terminal to transmit

6   the packet from the transmission source connectionless

7   packet communication terminal to the destination

8   connectionless packet communication terminal by using

9   the second connection,

10   a first transfer setting procedure which

11   causes the control apparatus to control the

12   connectionless packet transfer node as the first setting

13   target to transfer, to the first connection, the packet

14   from the transmission source connectionless packet

15   communication terminal to the destination connectionless

16   packet communication terminal, and

17   a second transfer setting procedure which

18   causes the control apparatus to control the

19   connectionless packet transfer node as the second

20 setting target to transfer, to the third connection, the

21 packet from the transmission source connectionless

22 packet communication terminal to the destination

23 connectionless packet communication terminal.

        23. A packet communication method according

2 to claim 1, characterized by further comprising

3   in a connectionless packet transfer network

4 which is logically build on a connection network

5 comprising a transmission link having a connection

6 multiplex transmission function and a connection switch

7 node having a connection switching function by adding,

8 as a terminal function unit, a connectionless packet

9 transfer node serving as the frame transfer apparatus

10 and a connectionless packet communication terminal

11 serving as the packet transfer apparatus to the

12 connection network, when communication is to be executed

13 between the connectionless packet communication

14 terminals,

15   a first transfer node selection procedure

16 which selects, as a first connection setting target, a

17 connectionless packet transfer node in a first area to

18 which a transmission source connectionless packet

19 communication terminal to transmit a packet belongs,

20   a second transfer node selection procedure

21 which selects, as a second connection setting target, a

22 connectionless packet transfer node in a second area to

23 which a destination connectionless packet communication

24   terminal to receive the packet belongs,

25   a third transfer node selection procedure

26   which selects, as a third connection setting target, a

27   connectionless packet transfer node for which the number

28   of connection switch nodes arranged between the

29   connectionless packet transfer node and the transmission

30   source connectionless packet communication terminal is

31   minimum,

32   a fourth transfer node selection procedure

33   which selects, as a fourth connection setting target, a

34   connectionless packet transfer node for which the number

35   of connection switch nodes arranged between the

36   connectionless packet transfer node and the destination

37   connectionless packet communication terminal is minimum,

38   a first connection setting procedure which

39   causes a control apparatus serving as the network

40   control server to control the connection switch node to

41   set a first connection between the connectionless packet

42   transfer node as the first setting target and the

43   connectionless packet transfer node as the second

44   setting target,

45   a second connection setting procedure which

46   causes the control apparatus to control the connection

47   switch node to set a second connection between the

48   transmission source connectionless packet communication

49   terminal and the connectionless packet transfer node as

50   the third setting target,

51   a third connection setting procedure which

52 causes the control apparatus to control the connection

53 switch node to set a third connection between the

54 connectionless packet transfer node as the third setting

55 target and the connectionless packet transfer node as

56 the first setting target,

57   a fourth connection setting procedure which

58 causes the control apparatus to control the connection

59 switch node to set a fourth connection between the

60 connectionless packet transfer node as the fourth

61 setting target and the destination connectionless packet

62 communication terminal, and

63   a fifth connection setting procedure which

64 causes the control apparatus to control the connection

65 switch node to set a fifth connection between the

66 connectionless packet transfer node as the second

67 setting target and the connectionless packet transfer

68 node as the fourth setting target.

   24. A packet communication method according

2 to claim 23, characterized by further comprising

3   a transmission setting procedure which causes

4 the control apparatus to control the transmission source

5 connectionless packet communication terminal to transmit

6 the packet from the transmission source connectionless

7 packet communication terminal to the destination

8 connectionless packet communication terminal by using

9 the second connection,

10   a first transfer setting procedure which

11 causes the control apparatus to control the

12 connectionless packet transfer node as the third setting

13 target to transfer, to the third connection, the packet

14 from the transmission source connectionless packet

15 communication terminal to the destination connectionless

16 packet communication terminal,

17   a second transfer setting procedure which

18 causes the control apparatus to control the

19 connectionless packet transfer node as the first setting

20 target to transfer, to the first connection, the packet

21 from the transmission source connectionless packet

22 communication terminal to the destination connectionless

23 packet communication terminal,

24   a third transfer setting procedure which

25 causes the control apparatus to control the

26 connectionless packet transfer node as the second

27 setting target to transfer, to the fifth connection, the

28 packet from the transmission source connectionless

29 packet communication terminal to the destination

30 connectionless packet communication terminal, and

31   a fourth transfer setting procedure which

32 causes the control apparatus to control the

33 connectionless packet transfer node as the fourth

34 setting target to transfer, to the fourth connection,

35 the packet from the transmission source connectionless

36 packet communication terminal to the destination

37 connectionless packet communication terminal.

25. A packet communication method according

2 to claim 23, characterized in that the connectionless

3 packet transfer node as the third setting target and the

4 connectionless packet transfer node as the first setting

5 target, which are present in the first area, are

6 connected through a plurality of connectionless packet

7 transfer nodes and connections present in the first

8 area, and the connectionless packet transfer node as the

9 fourth setting target and the connectionless packet

10 transfer node as the second setting target, which are

11 present in the second area, are connected through a

12 plurality of connectionless packet transfer nodes and

13 connections present in the second area.

26. A packet communication method according

2 to claim 19, characterized by further comprising

3 a notification procedure which records, as

4 statistical information, a band of each flow defined by

5 a pair of the transmission source address and

6 destination address for the packet transmitted/received

7 in the connectionless packet transfer node and notifies

8 the control apparatus of the recorded statistical

9 information, and

10 a flow list creation procedure which causes

11 the control apparatus to create a flow list in which

12 information containing the transmission source address,

13 destination address, and band is registered for each

14   flow, on the basis of the statistical information sent

15   from the connectionless packet transfer node,

16   wherein when a connectionless packet transfer

17   node for which a sum of bands of pass flows exceeds a

18   predetermined threshold value is detected by the flow

19   list in setting the connection, a connection which does

20   not pass through the connectionless packet transfer node

21   is set.

         27.   A packet communication method according

 2   to claim 21, characterized by further comprising

 3   a notification procedure which records, as

 4   statistical information, a band of each flow defined by

 5   a pair of the transmission source address and

 6   destination address for the packet transmitted/received

 7   in the connectionless packet transfer node and notifies

 8   the control apparatus of the recorded statistical

 9   information, and

10   a flow list creation procedure which causes

11   the control apparatus to create a flow list in which

12   information containing the transmission source address,

13   destination address, and band is registered for each

14   flow, on the basis of the statistical information sent

15   from the connectionless packet transfer node,

16   wherein when a connectionless packet transfer

17   node for which a sum of bands of pass flows exceeds a

18   predetermined threshold value is detected by the flow

19   list in setting the connection, a connection which does

20   not pass through the connectionless packet transfer node

21   is set.

         28.   A packet communication method according

2   to claim 23, characterized by further comprising

3   a notification procedure which records, as

4   statistical information, a band of each flow defined by

5   a pair of the transmission source address and

6   destination address for the packet transmitted/received

7   in the connectionless packet transfer node and notifies

8   the control apparatus of the recorded statistical

9   information, and

10   a flow list creation procedure which causes

11   the control apparatus to create a flow list in which

12   information containing the transmission source address,

13   destination address, and band is registered for each

14   flow, on the basis of the statistical information sent

15   from the connectionless packet transfer node,

16   wherein when a connectionless packet transfer

17   node for which a sum of bands of pass flows exceeds a

18   predetermined threshold value is detected by the flow

19   list in setting the connection, a connection which does

20   not pass through the connectionless packet transfer node

21   is set.